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Magnetic properties of the boundary layer at the Cretaceous/Tertiary boundary in the Gams section, Eastern Alps, Austria

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Abstract

The paper is concerned with the detailed sectional petromagnetic study of boundary clay in four 1A, 1B, 2A, and 2B Gams sections (in Austria). The composition of basic magnetic minerals in the boundary clay of all sections is similar. They are composed of iron hydroxides, hemoilmenite, titanomagnetite, magnetite, hematite, and iron. The difference is the presence in the Gams-1 section of metallic nickel, which is absent in the Gams-2 section, and the presence in the latter of iron sulfides of the pyrite type. Grains of titanomagnetite and ilmenite, connected with volcanic activity, are nonuniformly distributed in the boundary layer, which indicates their irregular precipitation in time. The ensemble of magnetic grains is characterized by high coercitivity. The boundary layer is characterized by an increased content of iron hydroxides. This effect is a global phenomenon and is irrelevant to the local physicogeographical conditions. Such a characteristic of impact events as the particles of metallic iron is almost absent in the boundary layer.

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